

September 27, 2017

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Per the desire of the Court of The Honorable Jon P. McCalla in the case of ECIMOS vs Carrier 2:15cv02726 to perform a forensic analysis of the RES LabVIEW code for the purpose of determining whether or not ECIMOS intellectual property license was violated by Carrier in the production of said code, the following is most respectfully submitted.

Attachments:

Exhibit A: JMC ECIMOS vs Carrier Report

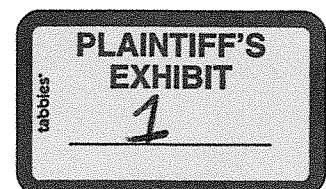
Exhibit B: Email and Excel attachment from Carrier discovery (C013081 and C013082)

Problem: Determine whether or not the LabVIEW code named RES was using the same data structures, text commands, data formats, and/or methodology that was used and licensed by ECIMOS to Carrier prior to Carrier replacing the ECIMOS code with the RES code.

Note: There was a significant time constraint placed on this examination. Simply, there was not enough time for a complete examination, only a small percentage, I would estimate under 10% of the RES code, and less than 5% of the database were examined.

History: During the court proceedings of Friday, September 1, 2017, and Tuesday, September 5, 2017, many documents were submitted to the court. Documents C013081 and C013082 are an email dated November 12, 2014, from Paula K. Davis (Amtec) to JC Stewart (Carrier) attaching an Excel spreadsheet containing examples of ECIMOS's valid tests and APIs. On September 18, 2017, I inspected the RES code operating in the Collierville, TN Carrier plant. There are two video recordings of that visit, one created by Carrier, and one created by Alpha Reporting Corporation. During the inspection I was provided with a copy of the RES LabVIEW source code and portions of the Carrier MES database, specifically those tables that started with "RT_." These portions were described to me as the only parts of the database that the RES code interfaced with.

Examination: Starting with the RES code, I first located the .INI file (a text file loaded for initialization) in the RES code, Exhibit A, p. 4. Next I explored the RES code looking for code interface nodes which would demonstrate LabVIEW calling an external dynamic link library (DLL). I found only a single DLL call to the Windows operating system used to control the mouse. The lack of code interface nodes led me to look for calls to the database path, listed in the .INI as "UDL File", Exhibit A, p. 4. Knowing I did not have time to look at the database during the visit, we requested a copy of the database and Carrier supplied the sections they thought were appropriate.



The search was then focused on the RES code while it was testing a unit. This made sure I could find data in the front panel objects. Verification of the data structure used by ECIMOS was found at this time in a front panel object found in "Run Stored Procedure.vi". In addition, a similar procedure was found in "Test Mgr.vi". Both of these cases were copied to the attached Exhibit A, pp. 7-8.

Also discovered as I was looking at the database, was the use of the "sysname" command, which can be used to alias names in a database, relating @Param1 to @P1, and @Param2 to @P2, Exhibit A, pp. 9, 30.

After the plant inspection, I enlisted the aid of Jeff Carr, who works with me at RTC Special Projects on Redstone Arsenal and who I know to have experience interfacing LabVIEW to an SQL database. Mr. Carr signed acknowledgment of receipt of the protective order prior to assisting me. Together we discovered the database structure presented in the attachment. Specifically, we found the Carrier part number AC18A13E3N in document C013082. We then found AC18C13EN000 in the Carrier database. The difference in model numbers appears to be simple evolution of the 18,000 BTU AC unit over time as updates and improvements were added. Further examination led to comparison of the MiniProd table in the database and in the ECIMOS database script code, Exhibit A, p. 13. These tables were nearly identical. We then compared the Runtest table and the Test Procedure table, Exhibit A, pp. 14-15, finding many similar comparisons. We also queried the database for RT_Get_Test_Sequence and found more similarities Exhibit A, p. 16.

Moving on to the examination of the RES LabVIEW code, we found that it is mostly is an interface to the database, the hardware and the operator. It does this in a very generic fashion using an actor framework software pattern.

We then did a database query to compare the data in the AC18A13E3N tab of C013082 with the AC18C13E3N000 part number in the Carrier database, Exhibit A, pp. 24-27. This was the first and only model number we had time to compare. However, we found 48 separate entries in which the comment column (H) matched either exactly or almost exactly. In addition, the name of the steps in column B also showed exact or near exact matching.

A quick calculation of the odds of such matching to occur randomly resulted in astronomical odds, Exhibit A, p. 32, leading us to the conclusion that the current Carrier database is a direct descendent of the ECIMOS database from the 1999-2004 timeframe, Exhibit A, p 33, while the software was being licensed to Carrier by ECIMOS.

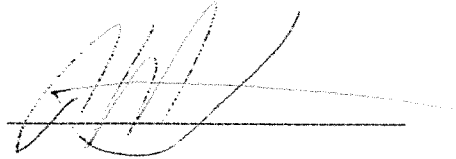
Conclusion: The RES LabVIEW code maintains contact with the database and the hardware. When the operator requests some function to be performed, the RES code queries the Carrier database for the test steps and procedures needed to cause the hardware to perform the tests requested. The LabVIEW code is innocuous in this respect as the ECIMOS IP exists inside the Carrier database, Exhibit A, pp. 17-23.

Even though we looked at about 10% of the LabVIEW code and less than 5% of the Carrier database, It is my opinion that the LabVIEW code named RES does use the same data structures, text commands, data formats, and/or methodology that was used and licensed by ECIMOS to Carrier prior to Carrier replacing the ECIMOS code with the RES code. Due to the overwhelming evidence found in such

a small sample, further examination of the RES code and the Carrier database seems unnecessary at this time.

I have never testified as an expert in any other proceeding.

My compensation is 200 dollars / hour for preparation, study, inspection and testimony.

A handwritten signature in black ink, appearing to be 'JMC', is written over a horizontal line.

James M. Chenault